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Livestock-associated MRSA in the Danish cattle production

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Background. In Denmark, livestock-associated methicillin resistant *Staphylococcus aureus* (LA-MRSA) CC398 is widespread in the pig production, with nearly 70 % of farms being positive, where *spa* type t034 is dominant. However, the **presence in other farm animals, such as veal calves, is less well known.** LA-MRSA in cattle and dairy production of many European countries, such as the Netherlands, Belgium and Germany have been reported. With this knowledge, the importance of a survey in the Danish cattle production became evident, in order **to assess the potential risk of human exposure to LA-MRSA from cattle.** If a possible spread of LA-MRSA in cattle is detected while the prevalence is still low, it may be possible to inhibit a development of rapid increase and dissemination of LA-MRSA within the sector as seen in the pig production.

Purpose. Therefore, we conducted a **screening in veal calves**, to investigate the possible presence of LA-MRSA in the primary cattle production. Additionally, we investigated the possible presence of LA-MRSA in samples of **bulk tank milk.**

Concluding remark. The findings of this study suggest a **low prevalence of LA-MRSA in the Danish veal production**, indicating this production chain, at present, **does not represent a reservoir of LA-MRSA of human health concern.** The primary presence of *spa* type t034 could indicate a spillover from the pig production, a possibility that needs to be investigated further.

Samples. We collected nasal swab samples from a total of **697 veal calves** originating from 17 Danish veal farms (n=604) and 2 slaughter houses (n=93). In addition, we collected **bulk tank milk samples from 50 dairy herds** representative of Danish milk production.

Method. All samples were analyzed by enrichment in Mueller-Hinton broth supplemented with 6.5 % NaCl, followed by screening on Brilliance MRSA2 agar and PCR. The possible carriage of *mecC* was as well investigated.

Results. Results are shown in Table 1. Only **four out of 697 veal calves were found MRSA positive.** The four samples were from two of the 17 on-farm collected samples (2/17 farms – 11.8 %, 95 % CI: 1.5 – 36.4 %). All isolates were *mecA* positive, and all isolates belonged to *spa* type t034 of CC398. The positive farms were **re-tested within 2-4 weeks where no samples were found MRSA positive.** **One of the 50 bulk tank milk samples was found MRSA positive, *spa* type t011 of CC398,** resulting in a 2 % (1/50 farms – 95 % CI: 0.0 – 10.6 %) of samples being positive. No occurrence of *mecC* carrying isolates was detected in bulk tank milk or veal calves.



Table 1. Overview of findings

Samples	MRSA pos. / total no.	MSSA pos. / total no.	MRSA <i>spa</i> types
Veal calves (n = 697)	4/697	8/275	t034 (n = 4)
Bulk tank milk (n = 50)	1/50	NA	t011
Farms* (n = 17)	2/17	6/17	NA

* Only related to farms where on-farm sampling was conducted and not including the number of farms represented by samples collected at slaughter houses

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